

Name(s) of Risk Team Members: P. Cirnigliaro, A. Etkin, R. Karol, E. Lessard, J. Maraviglia, D. Passarello, A. Piper, R. Savage, J. Scott, M. Van Essendelft			Point Value → Parameter ↓		1		2		3		4		5		
Area/Facility Description Title: Collider-Accelerator Department			Occupancy or Use		≤once/year		≤once/month		≤once/week		≤once/shift		>once/shift		
Area/Facility # (if applicable): FRA 26															
Area/Facility Description: Building 1005R RHIC Refrigerator Room			Severity		First Aid Only		Medical Treatment		Lost Time		Partial Disability		Death or Permanent Disability		
			Likelihood		Impossible		Unlikely		Possible		Probable		Multiple		
Approved by: <i>E. Lessard</i>			Date: 7-20-04		Rev.#: 1										
Reason for Revision (if applicable):  FRA number added. Uniform hazard nomenclature added.									Comments:						
					Before Additional Controls							After Additional Controls			
Physical Item or Activity	Hazard(s)	Control(s)	Occupancy A	Severity B	Likelihood C	Risk* AxBxC	Control(s) Added to Reduce Risk				Occupancy A	Severity B	Likelihood C	Risk* AxBxC	% Risk Reduction
Cryogenic fluids and systems	Contact with temperature – extremes that result in such injuries frost bite or burns	Design reviews, ASSRC reviews, proof testing, LOTO, work planning, PPE and training, postings, Cryogenic-system designs to consensus codes, inspections, relief valve testing	4	2	2	20									
Cryogenic fluids and systems	Oxygen deficiency	ODH analyses, ODH controls, training, interlocked emergency exhaust fans, PPE, remote/local audible/visible alarms, emergency response, EMTs, work planning, POMs, medical clearance, escape pack, MSDS, LOTO, postings, Cryogenic-system designs to consensus codes, inspections, relief valve testing	4	5	2	40									
Pressurized Systems	Being struck by an object due to a pressure release	Postings; PPE; maintenance; training; work planning; Cryogenic Safety Committee /ASSRC reviews; procedures; interlock systems; certification/testing of pressure related equipment; Tier 1 inspections; LOTO; C-AD Chief ME reviews; codes and standards usage	4	3	3	36									
Gases	Oxygen deficiency	ODH analyses, ODH controls, training, interlocked emergency exhaust fans, remote/local audible/visible alarms, emergency response, EMTs, work planning, POMs, medical clearance, escape pack, MSDS, LOTO, postings, Cryogenic system designs to consensus codes, cylinder storage controls, cylinder labels, inspections	4	5	2	40									
Hydraulics	Being struck by an object due to a pressure release	Design reviews, ASSRC reviews, proof testing, LOTO, work planning, PPE and training	4	3	3	36									

Cooling water	Being struck by an object due to a pressure release	Design reviews, ASSRC reviews, proof testing, LOTO, work planning, PPE and training	4	3	3	36					
Confined Spaces	Oxygen deficiency	Training, atmospheric testing before entry and periodically, entry procedures, Permits, work planning, LOTO, respirators, forced ventilation, personnel rescue equipment, emergency planning, EMTs	2	5	2	20					
Confined Spaces - Metal	Increased chance of shock due of proximity to conducting surfaces	All equipment is listed or reviewed by CEE; work planning; grounding standards; GFCI	2	4	2	16					
Electrical equipment & Power Supplies BNL Class A & B <250 V AC, <1000 VDC	Shock or Electrocution	All equipment is listed or reviewed by CEE, Tier 1 inspections, disconnected cable policy, installations comply with applicable codes, procedures, training, distribution drawings, LOTO, working hot permits, ASSRC reviews, qualified electricians and technicians, cabinet interlocks, postings, locked areas, guarding, work planning, GFCI, grounding standards, emergency procedures	4	4	2	32					
Electrical equipment & Power Supplies BNL Class C <600 V AC, <6000 V DC	Shock or electrocution, arc blast, burn	All equipment is listed or reviewed by CEE, Tier 1 inspections, disconnected cable policy, installations comply with applicable codes, procedures, training, distribution drawings, LOTO, working hot permits, ASSRC reviews, qualified electricians and technicians, cabinet interlocks, postings, locked areas, guarding, work planning, GFCI, grounding standards, emergency procedures, two-person rule for hot work	4	5	2	40					
MCCs, panels and wall sockets	Shock or electrocution, arc blast, burn	All equipment is listed or reviewed by CEE, Tier 1 inspections, disconnected cable policy, installations comply with applicable codes, procedures, training, distribution drawings, LOTO, working hot permits, ASSRC reviews, qualified electricians and technicians, cabinet interlocks, postings, locked areas, guarding, work planning, GFCI, grounding standards, emergency procedures	4	5	2	40					
Remotely and automatically operated equipment	Being caught or compressed by equipment	Guarding, training, posting, LOTO	2	3	2	12					
Working At Heights	Falls to a lower level such as falling off a ladder or over a railing	Postings, barriers, fall protection, maintenance, training, work planning, procedures, Tier 1 inspections, PPE, approved scaffolding and platforms, approved ladders, anti-slip surfaces	2	5	3	30					
Vacuum	Ear damage	Postings, PPE, maintenance, training, work planning, ASSRC reviews, procedures, Tier 1 inspections, Chief ME reviews, use of industry standards, design reviews	4	3	2	24					
Vacuum	Being struck by an object such as flying debris due to a vacuum failure	Postings, PPE, maintenance, training, work planning, ASSRC reviews, procedures, Tier 1 inspections, Chief ME reviews, use of industry standards, design reviews	4	3	2	24					

Walking – Working Surfaces	Falls at the same level	PPE; Tier 1; work planning; P.E. scheduled maintenance; internal and external audits; posting; labeling; training; barriers; communication; lessons learned	4	4	4	64	C-A staff identified outside walking/working surfaces that are in need of repair. PE instituted a program to correct deficiencies. Snow shovels and salt were distributed to staff for emergency use on walkways in winter storms. A safety checklist: Walking and Working Surfaces was distributed to staff. C-A O.P.M. 2.28.d was updated to indicate that work performed with risk factors of slipping and falling shall be classified at a minimum as a moderate hazard job and will require additional review and an Enhance Work Permit.	4	4	3	48	25%
Egress	Impaired egress	Tier 1; work planning; skill of craft; P.E. scheduled maintenance; internal and external audits; posting; labeling; training; barriers; communication; internal processes; lessons learned; life safety codes; emergency preparedness	4	4	3	48	The balcony is close to the turbines and a brake mechanism sticks into the isle way. A work order has been sent in to extend the balcony further away from the turbines.	4	4	2	32	33%
Storage	Being struck by an object such as a falling tool or materials	Tier 1; inventory control; work planning; postings; labels; barriers; internal and external audits; training; communication; internal procedures; lessons learned	4	5	2	40						
Chemical Use	Skin exposure	PPE, hazard communication training, specific hazard training, MSDS	3	2	3	18						
Chemical Use	Eye exposure	PPE, hazard communication training, specific hazard training, MSDS	3	2	2	12						
Chemical Use	Inhalation	PPE, ventilation, hazard communication training, specific hazard training, MSDS	3	2	2	12						
Hot Surfaces	Contact with temperature – extremes that result in such injuries as burns	Posting, PPE, barriers, training, tier 1	4	2	2	16						
Further Description of Controls Added to Reduce Risk:												
*Risk:	0 to 20	21 to 40	41-60				61 to 80		81 or greater			
	Negligible	Acceptable	Moderate				Substantial		Intolerable			